

D-177

Archeological Investigations at the Tower Stairhall

Independence National Historical Park
Philadelphia, Pennsylvania



by
Paul Y. Inashima

United States Department of the Interior
National Park Service
Denver Service Center
Resource Planning
Applied Archeology Center
Silver Spring, Maryland 20904
1998

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Cover: The cover is a detail from Charles Willson Peale's *View of Several Public Buildings in Philadelphia*, as engraved by James Trenchard. The engraving was issued in January 1790. Features included in the detail are the State House Yard wall (1770), Congress Hall (1787-1789), Independence Hall (1732-1748), the Tower Stairhall (1750-1753), and the American Philosophical Society Hall (1785-1789). The steeple on the Tower is not contemporaneous with the view as it was removed in 1781, and was not replaced until 1828. The image was cropped during scanning, and then processed in Photoshop to remove building numbers and sky-and-cloud engraving lines.

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August 26, 1998

Memorandum

To: James Bucholtz, Project Manager, Denver Service Center

From: Paul Inashima, Archeologist, Applied Archeology Center, Resource Planning,
Denver Service Center

Reference: Independence National Historical Park, Package 412A, Independence Hall, Project Type 43

Subject: Archeological Monitoring Within the Tower Stairhall

Attached is a summary report on the archeological monitoring and limited archeological excavation which accompanied the construction excavations for the new below ground Tower Stairhall HVAC duct system. The archeology described in this report was conducted over the period August 26 to September 9, 1996. This effort was facilitated by field assistance from George Nestor and Fran McAnulty of Keating Construction.

Highlights of this archeology include the recovery of a King George I copper halfpenny, dated to 1720; the retrieval of chronological and structural information on the 1732 Central Hall and 1750 Tower Stairhall foundations; the documentation of the 1732 Central Hall builder's trench; the discovery of remnants of the 1750 land surface; and the recording of the truncated chute of the 1828 William Strickland tower clock counterweight system.

Early involvement in the discussions on the design of the HVAC ductwork facilitated a limitation on impacts to cultural resources. Impacts to historic fabric were confined to a single hole created in the Central Hall foundation for the passage of the ductwork from the Central Hall basement into the Tower Stairhall. Impacts to archeological resources were constrained to the removal of c. 2.5 foot wide segment of the Central Hall foundation builder's trench, of a small section of adjoining historic topsoil, and of inadvertent minor scrapings of the historic topsoil along the southern half of the trench. Archeological excavation outside the areas of direct construction impact was restricted to a probe below the bottom of the builder's trench to determine the depth of the Central Hall foundation and a probe along the east face of the Strickland counterweight chute to determine the depth of that structure and its accompanying installation pit.

The preserved sections of historic topsoil along the base of the HVAC trench and the unexposed sections of historic topsoil and builder's trench beneath the remainder of the Tower Stairhall are recommended eligible for listing in the National Register of Historic Places under Criterion D. These resources are integrally linked to

the construction and early occupancy of Independence Hall as well as reflect on early eighteenth-century Philadelphia landscapes. By extension, the unexcavated space beneath the Central Hall is encompassed by this recommendation.

Paul Y. Ingham

Attachment

cc (w/att.):

Kurt Carr, Pennsylvania SHPO Office

Allen Cooper, Chesapeake/Allegheny SO

Doris Fanelli, Independence National Historical Park (5)

Diann Jacox, Independence National Historical Park

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Introduction

From August 26 to September 9, 1996, a combination of archeological monitoring and selective controlled excavation was performed within the Tower Stairhall of Independence Hall (Figure 1). These activities were necessitated by the installation of a new HVAC duct system along the west side of the Tower Stairhall (Vitetta Group 1993:Sub-sheet M1-2.0). This new placement was selected to avoid problems associated with the removal and re-installation of the existing duct system along the east side.

The current report provides a record of the archeological activities and associated observations, a brief integration of relevant prior research, and a contextual interpretation of the findings. The significant archeological resources identified during this project are several—the builder's trench for the Independence Hall foundation, the 1700's land surface prior to the construction of the Tower Stairhall, information on the construction of both the Independence Hall and the Tower Stairhall foundations, and the remains of the Strickland tower clock system. Evidence of early eighteenth and possibly late seventeenth century activities was also identified.

Previous Studies

Of relevance to the current project are earlier archeological investigations by Charles Wilson, Jr. beneath the Central Hall (Figure 2) and joint archeological/architectural studies by Lee Nelson and John Cotter around the Tower Stairhall's south entrance steps (Figure 3). Both investigations provide data on early eighteenth century land surfaces. The former also provides data on a well which existed prior to the construction of the Central Hall in 1733.

Charles Wilson, Jr. in 1967 excavated a well beneath the floor of the Central Hall and an adjoining test trench parallel to and from four to six feet south of the north interior wall of the hall. Beneath a deep fill, he uncovered a lens of lime and a 7-inch (17.78 cm) humus layer (Wilson 1967:6). He further noted undisturbed soils beneath the humus. To provenience his excavations, Wilson established a 0' elevation datum on the chair-rail line along the north interior wall; his datum was "17-5/8 inch [44.77 cm] below the "first floor" datum" which had been established by earlier architectural investigators. He found the humus to lie between 70-1/2 inch to 73 inch (179.07 cm to 185.42 cm) below his chair rail datum or 88-1/8 inch to 90-5/8 inch (223.84 cm to 230.19 cm) below the first floor datum Drawing No. NHP-IND 2026.

The various investigations (Cotter 1965) around the south entrance to the Tower Stairhall revealed a humic level, marked as "bottom of humus," at about 101-3/8 inch depth (Drawing No. NHP-IND 3520, Sheet 7) below—it is assumed—the first floor datum. The flagstone south of the steps, during those investigations, was marked (Drawing No. NHP-IND 3520, Sheet 5) at a depth of 85-1/8 inch (216.22 cm). The same location was recently assigned (D.S.C. 1995) a NAVD 88 elevation of 10.63 meters (418.50 inches); the southwest corner of the south entrance landing was assigned an elevation of 10.94 meters (430.71 inches). Lee Nelson (1966:caption to Illustration No. 4) found the original ground surface to be about 12 inches (30.48 cm) below the present surface grade.

Penelope Hartshorne Batcheler noted (1989:69) several items of archeological interest which were found in the Tower Stairhall during the 1960s restoration work:

... a section of a nineteenth century iron lightning rod, found in the northwest corner of the Tower Stairhall behind the first floor dado paneling and embedded in the plaster above the dado paneling.¹⁰ Other artifacts among plaster fragments and other debris, hidden behind the woodwork, included a bear's claw, two swagger sticks (one with a monkey's head),¹¹ fruit pits, lunch bones, and ticket stubs to Peale's Museum.¹² Of particular interest to the history of the

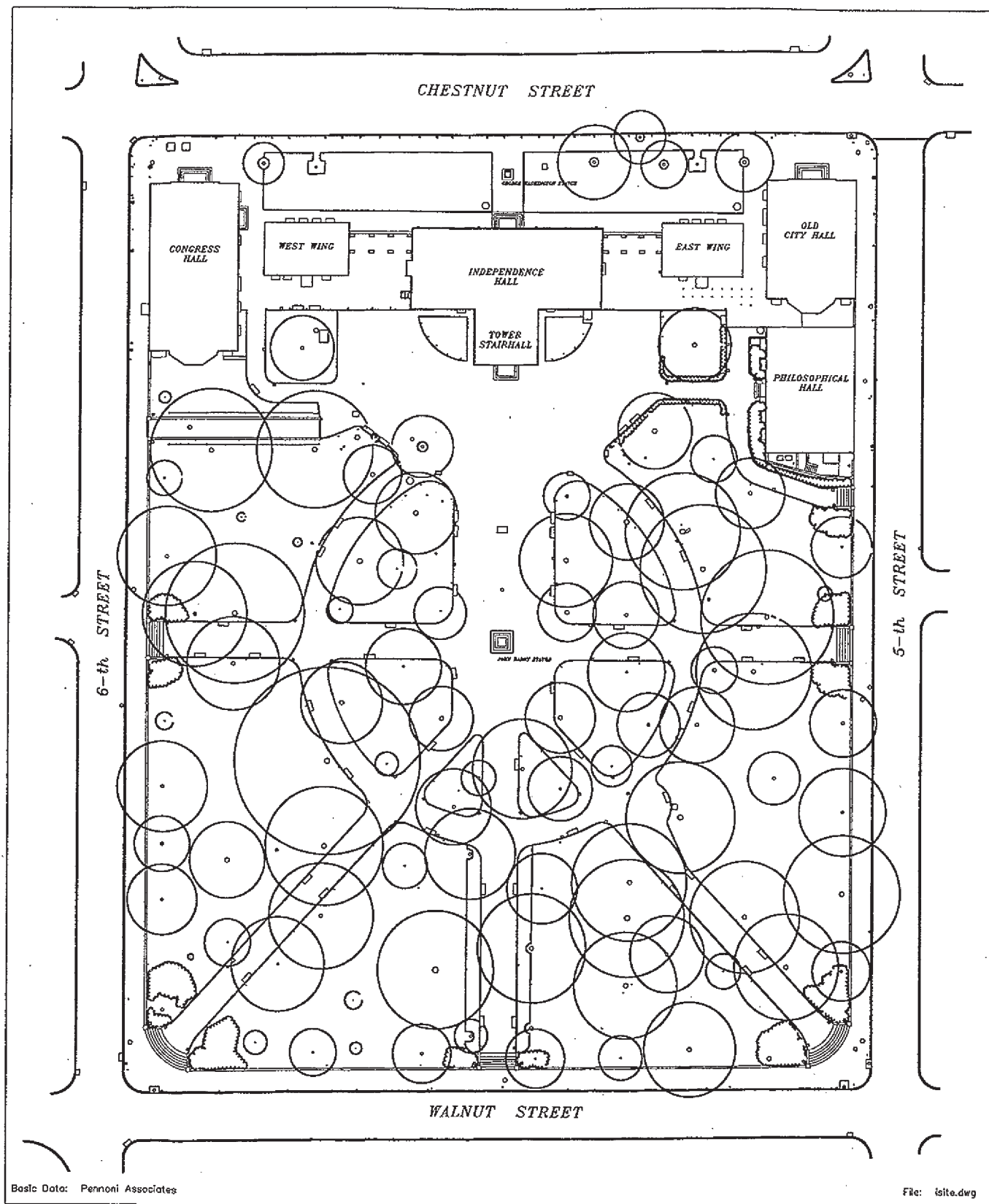


Figure 1. Location of the Tower Stairhall within Independence Square (modified from 1994 AutoCAD file prepared by Pennoni Associates).

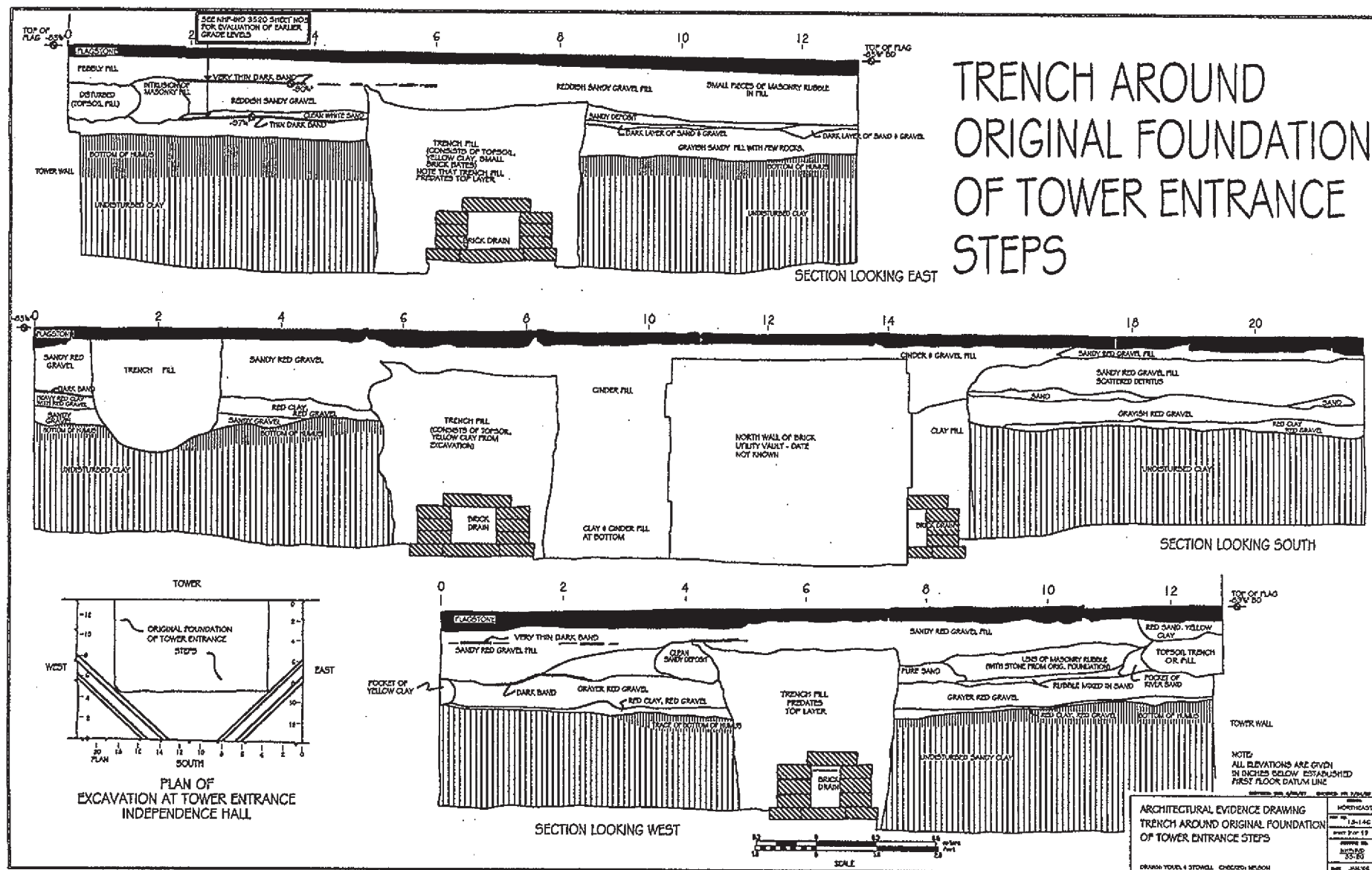


Figure 3. Evidence of landscape development revealed in 1965 by excavations around the Tower Stairhall entrance.

Peale Museum, a large mound of glass "wasters" showed up under the bottom stair landing in the NE corner of the Stairhall. Moses Williams (C.W. Peale's black assistant) while cutting the glass covers for the many silhouettes he made of Museum visitors apparently discarded the waste pieces of glass in this out-of-the-way dark hole.¹³

Ostensibly, the ticket stubs date all of these finds to the period of Peale's occupancy (1802-1829).

History of Tower Stairhall Flooring and Flooring Elevations

According to Lee Nelson (1966:1), the initial paving in the Tower Stairhall was likely brick. In 1797, the old paving was removed, and new brick pavement was laid (Nelson 1966:2). Sometime between 1818 and before 1875 (Figure 4), the brick flooring was replaced with stone (Nelson 1966:3). In 1898, soft "press bricks" were installed as replacements for the stone. In 1925, these were replaced with the brick flooring which was extant at the time of Nelson's investigations. In 1967, the 1925 paving was replaced with brick paving set on a sand bed over a reinforced concrete base (Batcheler 1989:22). It was this latter pavement which was encountered during the 1996 excavation of the new HVAC utility trench.

Original paving brick found in the Central Hall measured 2-1/8 to 2-1/4 inch by 4 to 4-1/4 inch by 8-1/2 to 8-3/4 inch (Nelson 1966:10). In the Tower Stairhall, "no known surviving sections of eighteenth century brick paving" were identified (Nelson 1966:11). It was found, however, that the 1925 floor in the Stairhall was set 3 to 5 inches higher than the original paving.

As Nelson (1966:13) observed, "Except for several sections of baseboard at the south entrance doorway and around the northwest corner, many of the Tower baseboards are original and have survived in situ since the 1750s." Despite "extensive dry-rot," Nelson was able to use a combination of the bottoms of these baseboards and the extant original blocking behind them to determine the level of the original paving. Remnant "islands" of paint indicated that these baseboards were fully exposed when first installed. Nelson's study (1966:14), further, revealed that "the Tower paving generally sloped downward from the archway to the south doorway, but it also had a "crown" on the north-south axis of the hallway." This interpretation matched the elevation data contained in the ca. 1750-1751 survey which stated that the south floor was 3 inches below the level of the door sill. As Nelson (1966:23fn11) noted:

Apparently it was not an uncommon practice in the eighteenth century to have a door sill which was higher than the interior floor level. A similar condition existed at the front entrance

Such a condition still survives at the northeast and southeast exterior doors of St. Peter's Church (1761), Third and Pine Streets, Philadelphia.

At the base of the stairs, Nelson determined (1966:15) that "there is ample physical evidence to show that it [the bottom riser] was originally 6" high" rather than its present three inches. Although no original brick paving survived at this location, original brick foundations occurred beneath the steps and newell.

Along the west half of the north wall, the baseboard was a "modern replacement," according to the comments on the note sheet for EODC Neg. No. 157.1950 (Cotter 1965:Figure 14). This may explain the displacement of and the space above the bricks beneath this baseboard which were found during the 1996 archeological monitoring.

The 1965 architectural investigations along the west wall baseboard adjacent to the northwest corner of the Guard's Room revealed paint evidence that the "original floor level was . . . about 4" below exist. [1925] floor" (comments on the note sheet for EODC Neg. No. 157.1946 (Cotter 1965:Figure 15)). Investigations along the northeast corner of the Guard's Room indicated that the 1750s corner pedestal extended about 3-3/4" below the 1920s paving (comments on the note sheet for EODC Neg. No. [illegible] (Cotter 1965:Figure 16)). Coal fragments were found in the paving of the Guard's Room, which indicated its use for coal storage (comments on the note sheet for EODC Neg. No. 157.1889 (Cotter 1965:Figure 20)).



Figure 4. F.B. Schell's "Vestibule, Independence Hall" in 1875 illustrates the presence of stone paving in the Tower Stairhall and the location of the Liberty Bell in the northwest corner (Temple University Urban Archives print reproduced in Stevick 1996:51).

Table 1. Elevations of selected locations converted from references to the earlier Independence Hall architectural datum (architectural datum assumed to be NAVD 88, 41.76± feet elevation, based on comparison of earlier elevation readings to 1996 transit readings on common points).

Relative Elevation	NAVD 88 Elevation (ft)	Location
-61-7/16"	36.64	1925 paving at the northwest corner of the Guard's Room (Nelson 1966)
-66-1/16"	36.26	1925 paving at the northwest corner of the Guard's Room (Nelson 1966)
-61-13/16"	36.61	1750s paving at east end (Nelson 1966)
-65-11/16"	36.29	1750s paving at east end (Nelson 1966)
c. -95-13/16"	c. 33.78	Original exterior finish grade east of entry steps (Drawing No. NHP-IND 3520:Sheet 6)
c. -98-9/16"	c. 33.58	Original exterior grade south of entry steps (Drawing No. NHP-IND 3520:Sheet 5)
c. -5.43'	c. 36.33	Top of Central Hall well shaft entry (scaled from Drawing No. NHP-IND 2026)
c. -7.59'	c. 34.17	Apparent top of Central Hall well shaft (scaled from Drawing No. NHP-IND 2026)
-22'-5/8"	19.14	Base of Central Hall well shaft (Drawing No. NHP-IND 2026)
c. -89-5/8"	c. 34.29	Surface of "old humus" near Central Hall well (Drawing No. NHP-IND 2026)

Nelson (1966:Appendix B) determined a series of relative elevations (Table 1). At the west end of the north wall of the Guard's Room, the top of the 1925 brick floor was - 61-7/16 inch. The 1750s floor surface was calculated to be a 4-5/8 inch lower (-66-1/16 inch below datum). At the east end, the 1925 floor was -61-13/16 inch; the 1750s floor dropped to c. - 65-11/16 inch below datum. The bottom of the rotted baseboard blocking between the northwest end of the Guard's Room and the west window was -66-5/8 inch. The level of the existing floor at this location was not recorded on the sheet. Just north of the east wall pedestal, the bottom of the rotted baseboard blocking was -66-5/8 inch and the existing floor was -62-1/2 inch.

At the pedestal north of the east closet door, the 1750s baseboard extended about 4'-1/8" below the paving. Within the closet beneath the stairs, the investigations (comments on the note sheet for EODC Neg. No. [illegible] (Cotter 1965:Figure 19)) found:

Remnant of old, if not original paving . . . after removal of "modern" marble floor (associated with lavatory). Note that pattern is parallel with walls. Original paving in Central Hall was a 40° pattern. Tower floor was probably similar. If this paving is original, transition probably occurred at doorway. This paving about 4-1/8" below Tower paving.

These brick measured 2-1/8 by 4 by 8-1/8± inches.

1996 Construction Excavation and Associated Archeological Monitoring

Prior to the start of the archeological monitoring, the brick paving and underlying sand bed had been removed by personnel from Keating Construction from about 13.9 feet (4.24 m) along the north length of the new HVAC duct corridor. This exposure was subsequently extended southward to the north wall of the Guard's Room (Figures 5, 6, and 7). The reinforced concrete bed was sequentially removed under archeological monitoring from north to south beginning on August 26. The underlying fill soils were excavated with the assistance of George Nestor and Fran McNulty of Keating Construction. The Feature 1 clock-counterweight pit, the Feature 2 builder's trench, and small sections of the historic topsoil were excavated solely by the archeologist. Feature matrices and historic topsoil were sifted through 1/4-inch mesh hardware cloth, and were examined for artifacts. The fill soils were sampled screened. Selected soil and feature matrix samples were retained for future palynological/phytolith analysis.

Measured plans and profiles were made during the course of the construction excavation and associated archeological monitoring/excavation of the HVAC utility trench. In addition, a paired set of color slide and black and white photographs was taken to document the various stages of work, as well as the archeological finds.

Finally, as the installation depth of the new HVAC duct did not require impacting the historic topsoil layer, only small sections of it were excavated just south of Feature 2, in the immediate area of Feature 1, and inadvertently at the south end of the trench. The remainder of the topsoil which had been exposed was preserved in place, as such resources have become an increasingly rare artifact of the early eighteenth century Philadelphia landscape. The completed utility trench measured approximately 20.75 foot long by 2.7 to 2.9 foot wide. It extended from the Central Hall foundation at the northwest corner of the Tower Stairhall to the north wall at the northwest corner of the Guard's Room, and ran along the east side of the west Tower Stairhall foundation. Archeological fieldwork was completed on September 9.

Horizontal Measurements

Horizontal measurements were taken relative to the wall above the wood rail, since the lower portion of the north and west walls along the excavation trench had been covered by protective wall board. The width of the rail along the north wall was about 0.35 foot (10.7 cm), and the wall board extended another $0.1 \pm$ foot ($3 \pm$ cm) beyond that. Along the west wall, the rail was slightly wider, 0.38 foot (11.6 cm).

Elevation Datums

During his 1965 architectural investigations, Lee Nelson(1966:iii) employed an "independent and arbitrary datum line previously established for recording Assembly Room evidence. This datum was recently formalized by attaching a brass bench mark to the masonry wall inside the northeast closet of the Assembly Room." It is assumed that this is the same elevation referred to by Wilson (1967) as the "first floor datum." Wilson's "first floor datum," in turn, was 17-5/8 inches higher than the "chair rail datum" which he used for elevation reference during his investigation of the well beneath the Central Hall.

For the 1996 work, a series of elevation readings were taken using a Topcon AG30 transit. These readings (Tables 2 and 3) were referenced to the NAVD 88 elevations established during recent surveys by Pennoni Associates for the parkwide utility distribution system project. (NAVD elevations are 4.62 feet greater than comparable City Mean Datum elevations.) In turn, elevation translations for the arbitrary elevations referenced

Table 2. Elevations of selected locations near the Tower Stairhall south entrance.

Relative Elevation (ft)	NAVD 88 Elevation (ft)	Location
4.76	34.55	Paving at southwest corner of the Tower.
4.62	34.69	Paving at the southwest corner of the south entry.
4.65	34.66	Paving at the southeast corner of the south entry.
4.52	34.79	Paving at the southeast corner of the Tower.
3.92	35.39	Southwest corner of the first step.
3.92	35.39	Southeast corner of the first step.
3.42	35.89	Southwest corner of landing.
3.41	35.90	Southeast corner of landing.
3.38	35.93	On metal band in center of landing.
4.43	34.88	Flagstone at southwest corner.
4.43	34.88	Flagstone at southeast corner.

Table 3. Elevations of selected locations within the Tower Stairhall.

Relative Elevation (ft)	NAVD 88 Elevation (ft)	Location
5.54	35.93	On metal band on south steps' landing.
4.58	36.89	North corner of first step on tower stairs.
5.42	36.05	Top of concrete above north nail datum.
5.47	36.00	Top of concrete 5 feet south of north nail datum.
5.62	35.85	Top of concrete 15 feet south of north nail datum.
7.88	33.59	Top of historic land surface.
5.61	35.86	Top of concrete 20 feet south of north nail datum.
10.95	30.52	Base of Independence Hall builder's trench.
4.22	37.25	Center of Tower Stairhall paving.

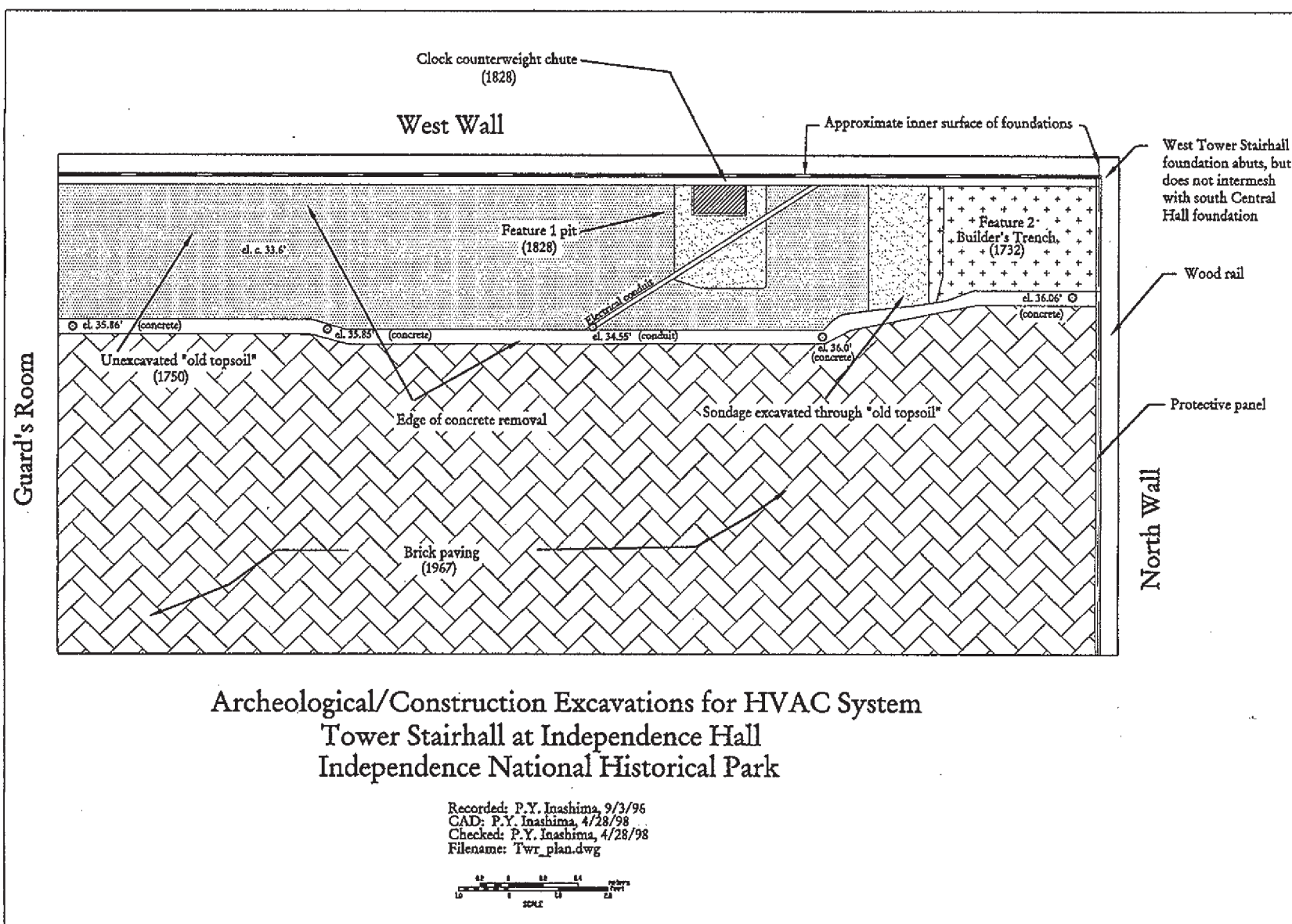


Figure 5. 1996 Tower Stairhall archeological site plan.

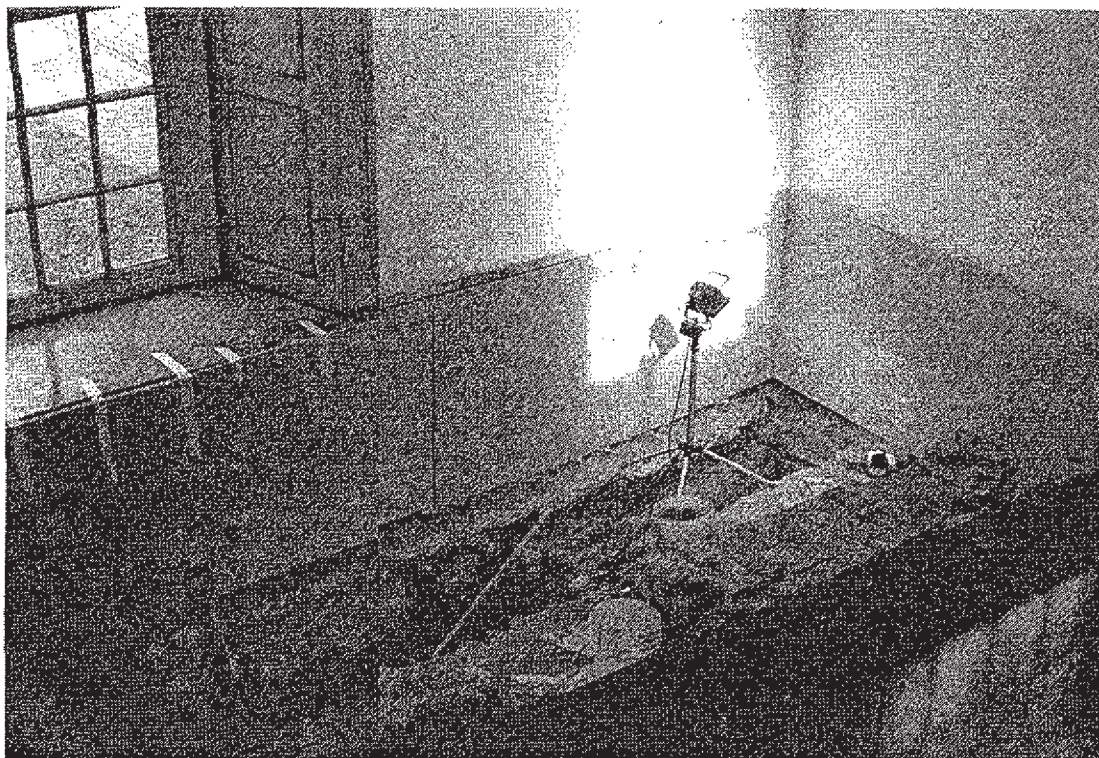


Figure 6. The HVAC trench, facing northwest.

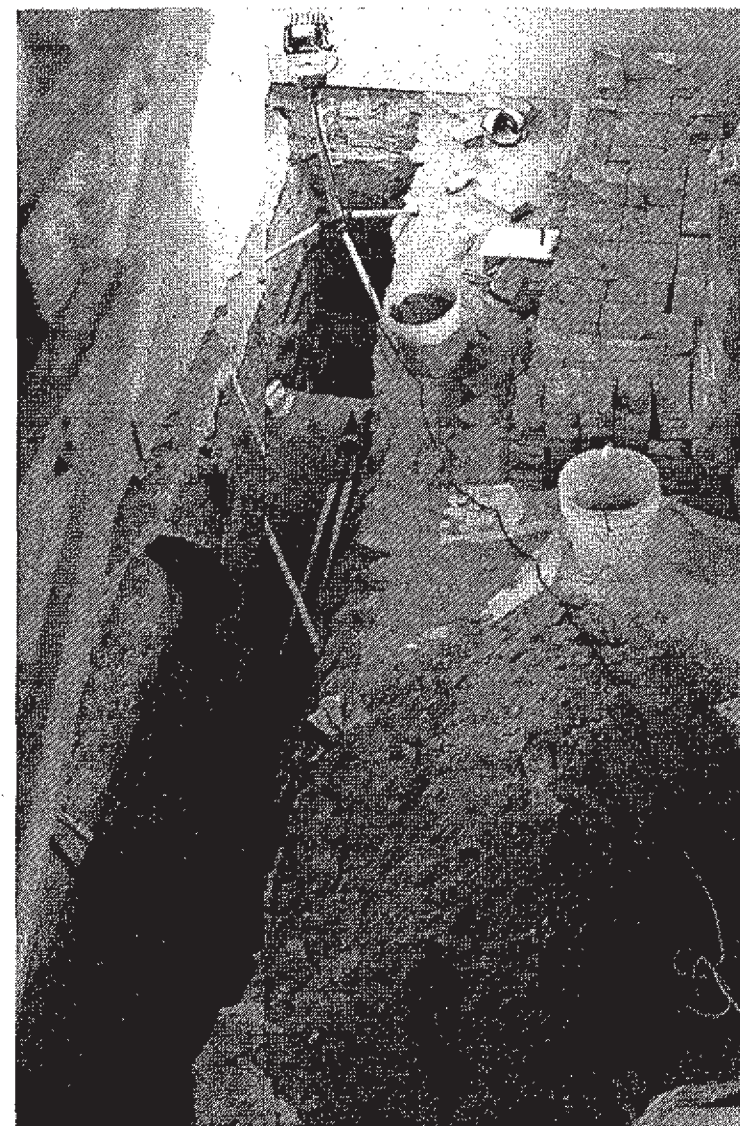


Figure 7. The HVAC trench, facing north.

to the 1965 datum were calculated. The 1965 datum was determined to correspond to a NAVD 88 elevation of approximately 41.76 feet (12.73 meters).

To calculate the absolute elevation of the 1965 architectural datum, two points noted during the 1965 investigations were relocated. These points were the north end of the first tread of the Tower stairs (-57-3/4 inches below 1965 datum) and the southeast corner of the first step of the south entrance steps (-77-1/8 inch below 1965 datum), as recorded on Sheet 1 of Drawing No. NHP-IND 3520. The corresponding elevation readings in 1996 were 36.89 feet and 35.39 feet. Comparison of these 1996 elevation readings with the earlier relative elevations yielded "first floor datum" elevations of 41.70 feet and 41.82 feet, respectively. For the purposes of the current report, an elevation based on the mean of these two determinations, 41.76 feet, is used for the 1965 datum. (Access to the Assembly Room closet bench mark mentioned by Nelson (1966:iii) was not available during the 1996 work.)

Stratigraphy

The stratigraphy (Figure 8) exposed within the HVAC utility trench consisted of flooring materials, fill deposits, and natural soils. The initially encountered levels included c. 0.2 foot (6.1 cm) of brick paving, c. 0.15 foot (4.6 cm) of sand bed, and c. 0.35 foot (10.7 cm) of reinforced concrete base. The concrete base rested on c. 0.3 foot (9.1 cm) of ashy silt fill soils which contained fragments of schist and crushed brick. These soils overlay about 1.63 feet (49.7 cm) of a clean, dry mottled loam fill. Beneath the clean fill soils was the historic land surface which consisted of a dark yellowish brown silt loam (10YR3/4). Beneath the historic topsoil was a subsoil of sandy silt loam.

Brick Flooring

The brick floor extant at the time of the 1996 work had been installed in 1967 (Batcheler 1989:22). It consisted of brick paving which had been laid on top of a sand bed, which in turn had been set over a reinforced concrete base. The bricks used in the 1967 floor measured 0.7 by 0.35 by 0.23 foot (8-3/8 by 4-3/16 by 2-3/8 inch). Along the north side of the concrete base, an asphalt expansion joint had been placed to separate the concrete from historic fabric.

Ashy Silt Fill

The ashy silt fill layer (Stratum A) likely dates to the 1896-1898 restoration period. This is assumed based on the presence of similar ashy materials within the truncated, below ground portion of the Strickland clock counterweight chute. The visible portions of that chute are known to have been removed at the time of that restoration (Batcheler 1989:63). The use of ash and cinder fill is, also, consistent with use during the late nineteenth and early twentieth centuries.

Silt Loam Fill

The silt loam fill layer (Stratum B) consists of a dry, finely textured, mottled silt loam. The soil is a

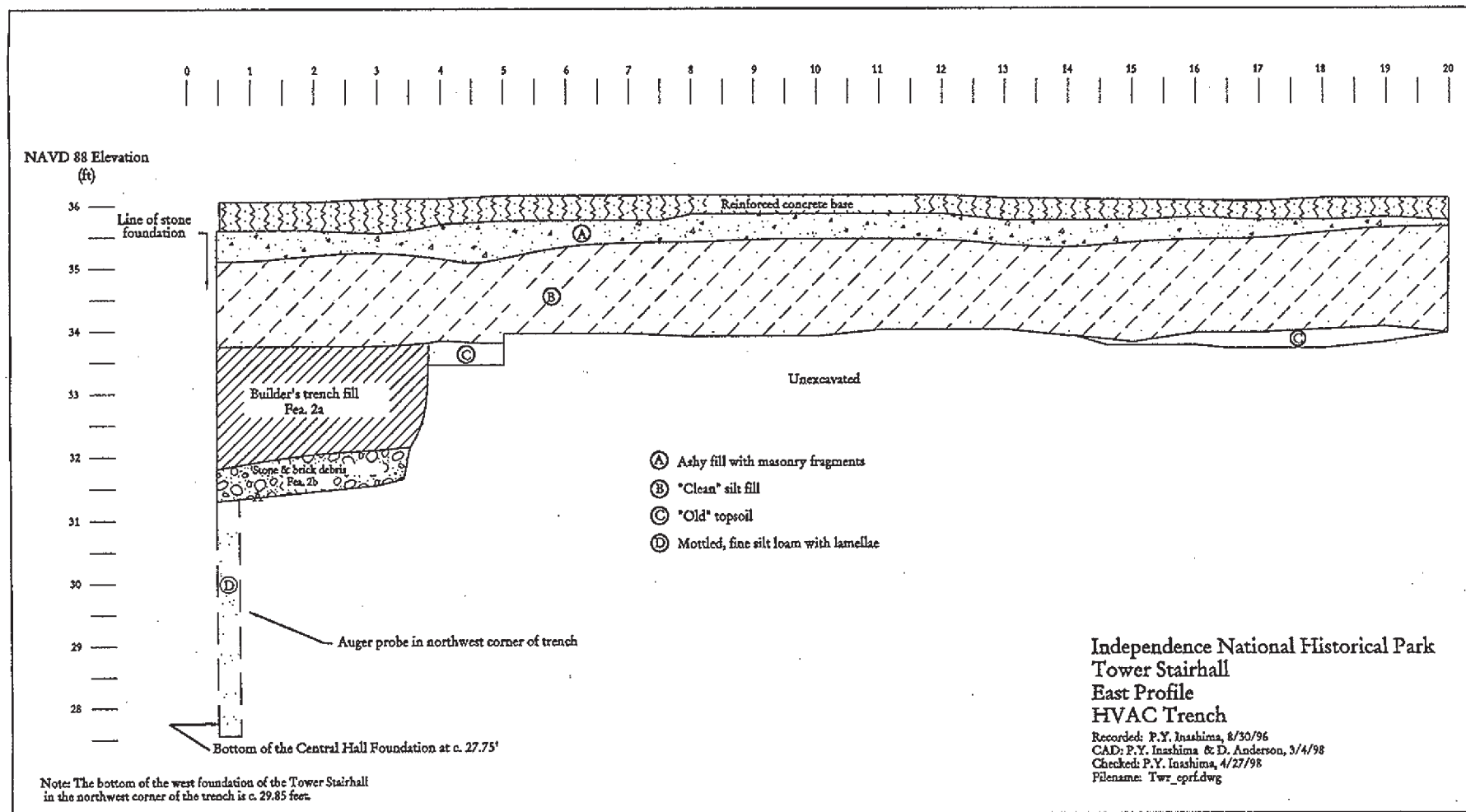


Figure 8. East wall profile of the HVAC trench.

yellowish brown (10YR5/6) with brownish yellow (10YR5.5/5) mottles. Stratum B represents soils which had been excavated from the trenches for the tower foundations as it is devoid of artifacts, lies over the buried historic land surface, and matches the characteristics of the subsoil beneath the historic humic soils. Moreover, the effects of pedoturbation or soil mixing resulting from faunalurbation (movement of burrowing animals) and floralturbation (movement of plants) (Wood and Johnson 1982) are not evident. This suggests that its surface was not exposed for long as open ground. The stratum likely was deposited during the initial phase of tower construction, and was shortly thereafter covered over.

Historic Land Surface

The buried humic soil layer (Stratum C) consists of a dark yellowish brown silt loam (10YR3/4). This soil has a noticeable organic content, retain artifacts consistent with the early eighteenth century, and contain evidence of pedoturbation. Trails of organic materials, created by the vertical movement of vegetation and worms, extend from this layer into the underlying subsoil. These conditions indicate the intact nature of this stratum. The last exposure of this layer dates to the time of the c. 1750 excavations for the tower foundations, which resulted in their burial beneath the redeposited subsoils.

Silt Loam Subsoil

The subsoil (Stratum D) which underlies the historic topsoil layer consists of a sandy silt loam with dark yellowish brown (10YR4/6) and yellowish brown (10YR5/4) soils.

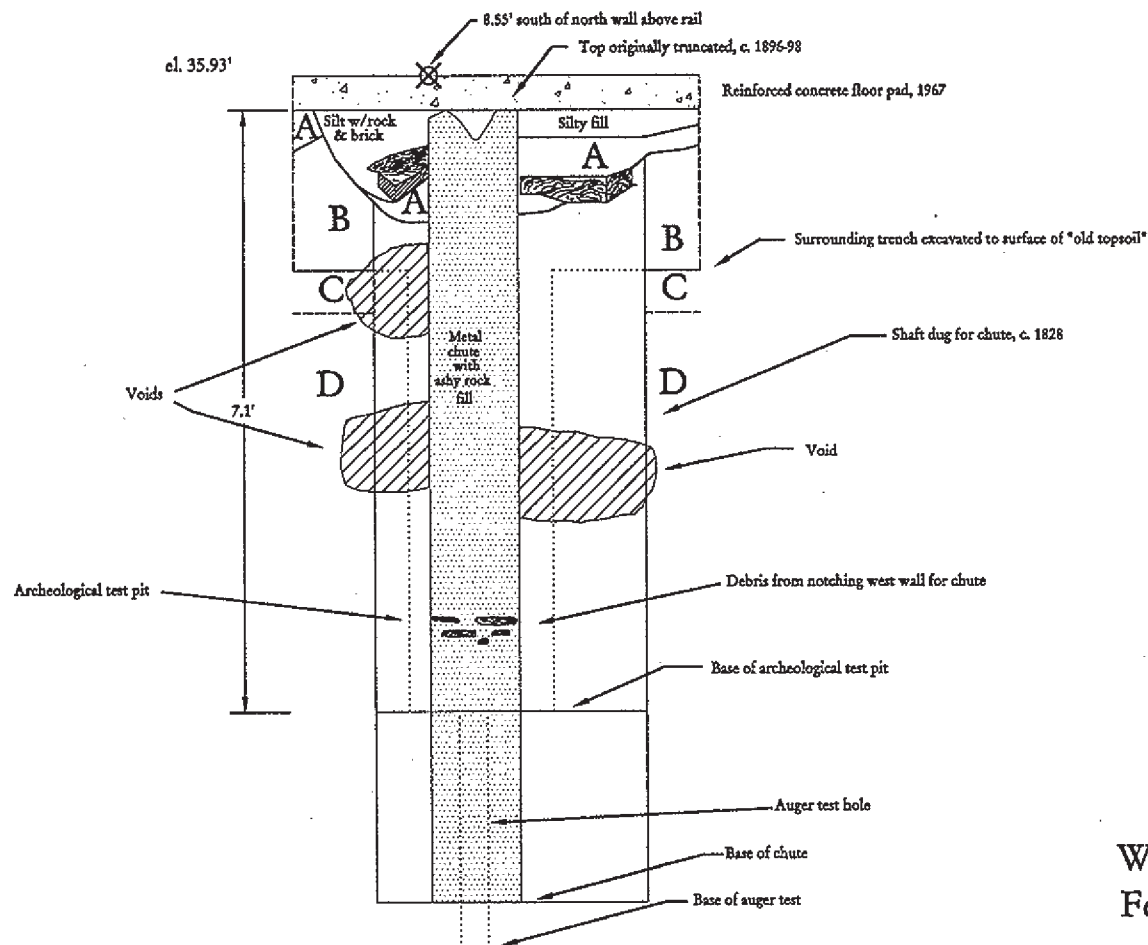
Features

Three features were designated during the course of the excavation. Feature 1 is a metal, clock counterweight chute and its associated installation pit. Feature 2 is the builder's trench for the south foundation of the Central Hall. Feature 3 is a c. 1967 electrical line pipe conduit.

Feature 1

Feature 1 (Figure 9) consists of a metal chute and two surrounding, vertically superimposed pits. The chute is situated just north of the west window of the Tower Stairhall. The chute dates to William Strickland's 1828 restoration of the tower steeple (Batcheler 1976:302). It originally functioned to house the counterweight for Strickland's tower clock. A companion chute occurred directly opposite it along the east wall of the Tower Stairhall. During T. Mellon Rogers' 1896-1898 restoration (Batcheler 1989:62-63), the counterweights and the sections of the chutes above the first floor level were removed, leaving the sections below that floor truncated in place. (The appearance of the exposed portion of the chute at the first floor level is documented in a c. 1896 photograph of the east window by W.H. Rau, which has been reproduced as Illustration 32 in Batcheler 1989:150 (INHP negative 1642)).

The top of the truncated metal chute extended to the bottom of the 1967 reinforced concrete base and was—at that level—surrounded by a shallow basin-shaped pit. The top sides of the truncated chute had been bent to



- Note: (1) The east face of the chute lies c. 1.28 feet east of the wall above the rail.
 (2) The base of the chute was determined by an auger probe hole.
 (3) The base of the Tower Stairhall foundation in the northwest corner of the trench is c. 29.85'.



West Wall Profile Feature 1

Recorded by: P.Y. Inashima, 9/3/96
 CAD: P.Y. Inashima, 4/27/98
 Checked: P.Y. Inashima, 4/27/98
 Filename: Towerpro.dwg

Figure 9. Feature 1 cross section, facing west.

the north and south, creating the appearance of open wings. The basin-shaped or upper pit measured approximately 4 foot (1.22 meter) long from north to south, and extended 2.2+ feet (67.06+ cm) east of the stone foundation. It consisted of a loose matrix of ashy fill and brick and stone fragments, and had a depth of approximately 1.4 feet (42.67 cm). A layer of stone fragments "lined" the base. This pit cut through the adjoining ashy and clean fill layers. Its bottom overlay a smaller rectangular intrusion which surrounded the metal chute and continued through the mottled silt loam fill, the historic topsoil, and the underlying subsoil. The intrusive lower pit measured 3.2+ feet north to south by 2.2+ feet east to west (97.54+ by 67.06+ cm), and was offset to the north around the chute. The lower pit's matrix consisted of a yellowish brown/dark yellowish brown (10YR4.5/5) silt fill, surrounded at its upper end by the dark yellowish brown (10YR3/4) silt loam of the historic topsoil. At an elevation of approximately 32.33 feet (9.85 meters), the texture of the fill matrix shifted to a sandy silt.

To determine the depth of both the metal chute and the accompanying lower pit, a 1.8+ foot north to south by 1.4+ foot east to west (54.86+ by 42.67+ cm) unit was opened along the east side of the chute (Figure 10). This unit was excavated as deep as possible (to elevation, 29.93 feet (9.12 meters)) with shovel and trowel. Then, a posthole digger (to elevation, 27.53 feet (8.39 meters)) and, finally, a bucket auger were employed to reach the base of the chute and its installation pit. During the test excavation, three large voids were encountered in the matrix surrounding the metal chute (at elevations—30.68 to 31.78 feet (9.35 to 9.69 meters), 31.03 to 32.08 feet (9.46 to 9.78 meters), and 32.83 to 33.93 feet (10.01 to 10.34 meters)). Fragments of rock were encountered within the backfilled pit down to an elevation of 26.93 feet (8.21 meters). The base of the metal chute was detected at an elevation of 26.18 feet (7.98 meters). The base of the chute rested on clean subsoil. At approximately 26.13 feet (7.96 meters), a clean, damp, slightly clayey, dark yellowish brown (10YR3/6) silt was found. The auger probe was completed at an elevation of 25.63 feet (7.81 meters).

The north side of the chute lay 7.45 feet (2.27 meters) south of the north wall of the Tower Stairhall, as measured above the wood rail. The exposed east face of the chute was approximately 1.1 foot (33.5 cm) wide. The north and south faces extended about 0.6 foot (18.3 cm) out from the foundation, and about 0.64 foot (19.5 cm) into it. Stones had been chipped from the foundation to accommodate the chute. Where exposed by the archeological excavation near the upper end of the chute, the clearance on either side of the chute was about 0.6 foot (18.29 cm). (Cracking encountered in the wall plaster above this chute in 1990 implies that the above ground portions of the chute had, likewise, been cut into the exterior wall (Brookover 1990).) The sheet iron which comprised the chute was 3/16+ inch (0.48+ cm) thick. At 0.95 foot (29.0 cm) below the truncated top of the chute, a horizontal, 0.15 foot (4.6 cm) wide band occurred along the north and south panels, starting c. 0.1 foot (3.0 cm) in from the eastern corners (Figure 11). The interior of the chute had been filled with an ashy rubble matrix, apparently to its full depth.

The large disturbance pit at the top of the truncated metal chute may date to the 1965 repaving effort, and to an opportunistic investigation of the then exposed chute. The lower pit dates to the original installation of Strickland's tower clock system in c. 1828.

Feature 2

Feature 2 is the 1732 (Toogood 1996:10) builder's trench for the south foundation of the Central Hall. The feature was exposed during the excavation of the north end of the HVAC utility trench. It first became apparent at the same elevation (c. 33.6 feet (10.24 meters)) as the surface of the historic topsoil (Figure 8). Its excavation revealed that it occupied about 3.35 feet (1.02 meters) of the area south of the Central Hall foundation. The fill matrix at that level consisted of a very dark grayish brown (10YR3/2) silt. The upper silt deposit varied in thickness from 1.6 feet (48.8 cm) at the south to 1.95 feet (59.4 cm) along the foundation. Underlying the silt deposit was a circa 0.5 foot (15.2 cm) thick layer of silt and brick and rock fragments. The

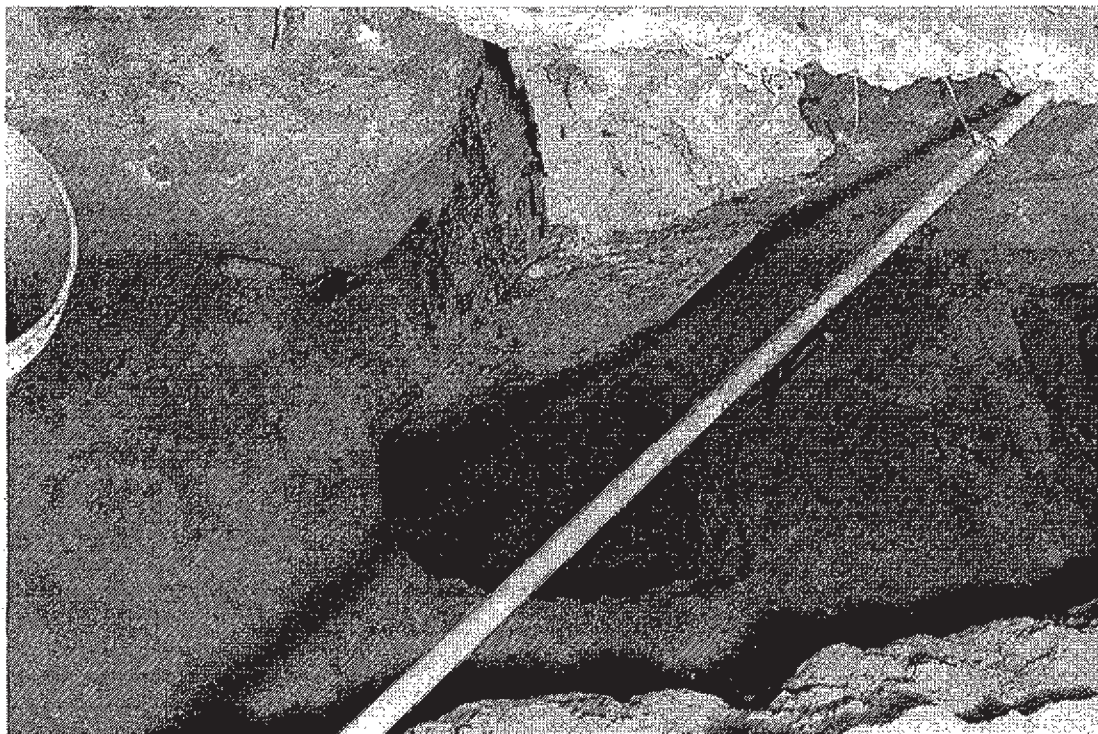


Figure 10. The Feature 1 metal chute and archeological test unit, facing northwest. Note the void in the northwest corner of the unit.



Figure 11. Detail of the truncated end of the Feature 1 metal chute, facing northwest.

bases of both trench strata sloped downward toward the foundation. Beneath Feature 2, the soil was a mottled fine silt with lamellae. The dominant soil was yellowish brown (10YR5.5/4) in color, and the mottles and lamellae were dark yellowish brown (10YR4/6).

The upper portion of the trench matrix was sub-designated Feature 2a. (Feature 2a was excavated in two levels, each approximately 1 foot thick.) The lower portion was sub-designated Feature 2b. The composition of the Feature 2b matrix indicates that the builder's trench remained open during the initial stages of the construction of both the stone foundation and the brick building wall. This accounts for the genesis of the Feature 2b masonry fragment layer.

Due to the depth of the HVAC penetration through the Central Hall foundation, the section of the historic builder's trench within the boundaries of the HVAC utility corridor was completely excavated archeologically.

Feature 3

Feature 3 is a modern metal conduit which passed diagonally over Feature 1 (Figures 5 and 10). The elevation of the top of the conduit is 34.55 feet (1.53 meters). Inspection of various facilities drawings indicated that the conduit contained an electrical line, and likely had been installed during the repaving work in 1967.

Structural Evidence

During the investigation of the Central Hall builder's trench, a limited study of the Central Hall and Tower Stairhall foundations was performed. This examination looked at two questions: (1) the depths of the foundations and (2) their structural interrelationship. To answer these questions, a small probe was excavated in the northwest corner of the HVAC trench, at the junction of the two foundations. Below the base of Feature 2b, a 1.2 foot (36.6 cm) east-to-west by 1.5 foot (45.7 cm) north-to-south pit was initially dug (Figure 12). The base of the west Tower Stairhall foundation was reached at an elevation of c. 29.85 feet (9.1 meters). At that point, a 0.6 by 0.8 foot (18.3 by 24.4 cm) hole was continued along the Central Hall foundation. The base of that foundation was attained at an elevation of 27.75 feet (8.46 meters). The probe was discontinued (Figure 13) at an elevation of 27.55 feet (8.40 meters).

By comparison, the historic grade in this area is about 33.59 feet (10.24 meters), which would have placed the base of the Tower Stairhall foundation 3.74 feet (1.14 meters) below historic grade and the base of the Central Hall foundation 5.84 feet (1.78 meters) below historic grade. The present surface of the interior basement floor (as determined through the hole created in the Central Hall foundation for the new HVAC duct) has an elevation of c. 27.95 feet (8.52 meters), only slightly higher than the base of the Central Hall foundation. The two foundations' depths at this location, moreover, appear to be at variance with an earlier record that the Central Hall foundation was "two feet below the cellar floor level" (Batcheler 1989:79fn1) and the "tower foundations would have been at least as deep as those of the main building" (Batcheler 1989:88fn6).

As to construction, the Central Hall foundation was approximately 2.5 foot (76.2 cm) thick, and had been laid with both surfaces vertically straight. The thickness of the Tower Stairhall foundation was not determined. Its interior surface, however, unlike the Central Hall foundation, had been laid at a slight slant. At a vertical distance of 5+ feet below the top edge of the foundation, the foundation wall extended outward about 0.35 foot (10.7 cm). Both foundations had been constructed with large blocks fashioned out of a micaceous schist fieldstone. The Tower Stairhall foundation abutted, but did not interlink with the Central Hall foundation.

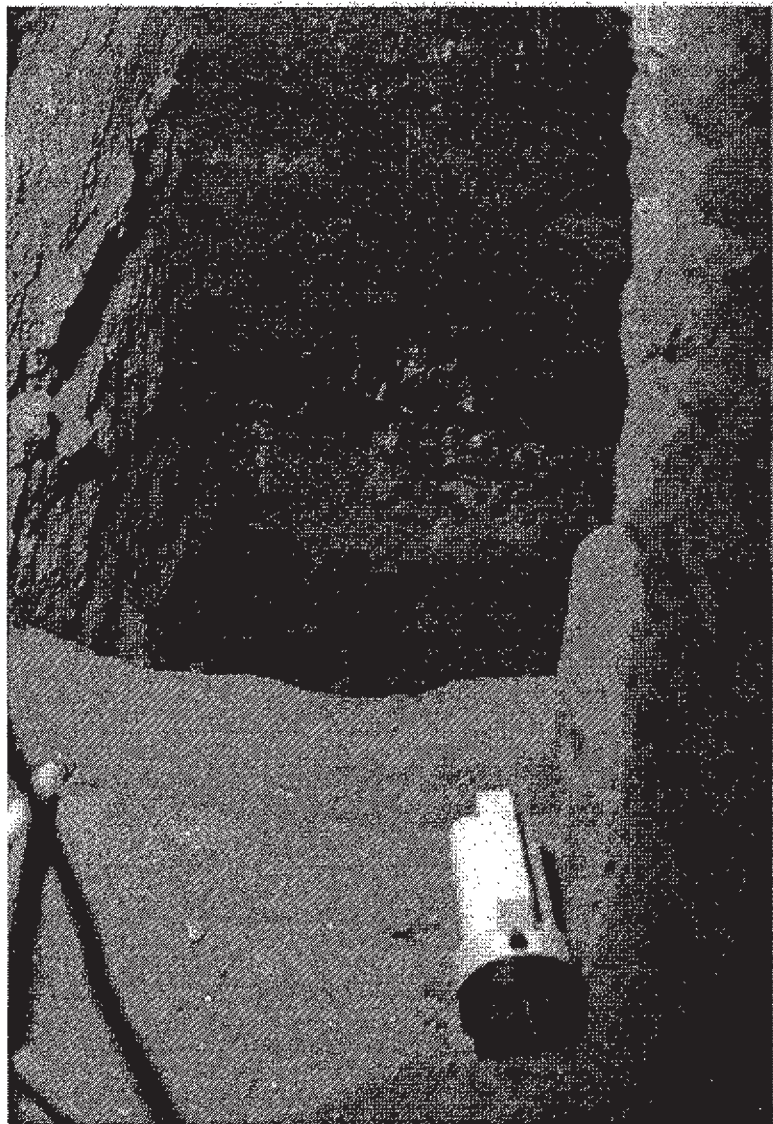


Figure 12. Junction of the Tower Stairhall and Central Hall foundations at the northwest corner of the HVAC trench, facing north. Note the hole being drilled for the HVAC duct and the archeological test probe below it.

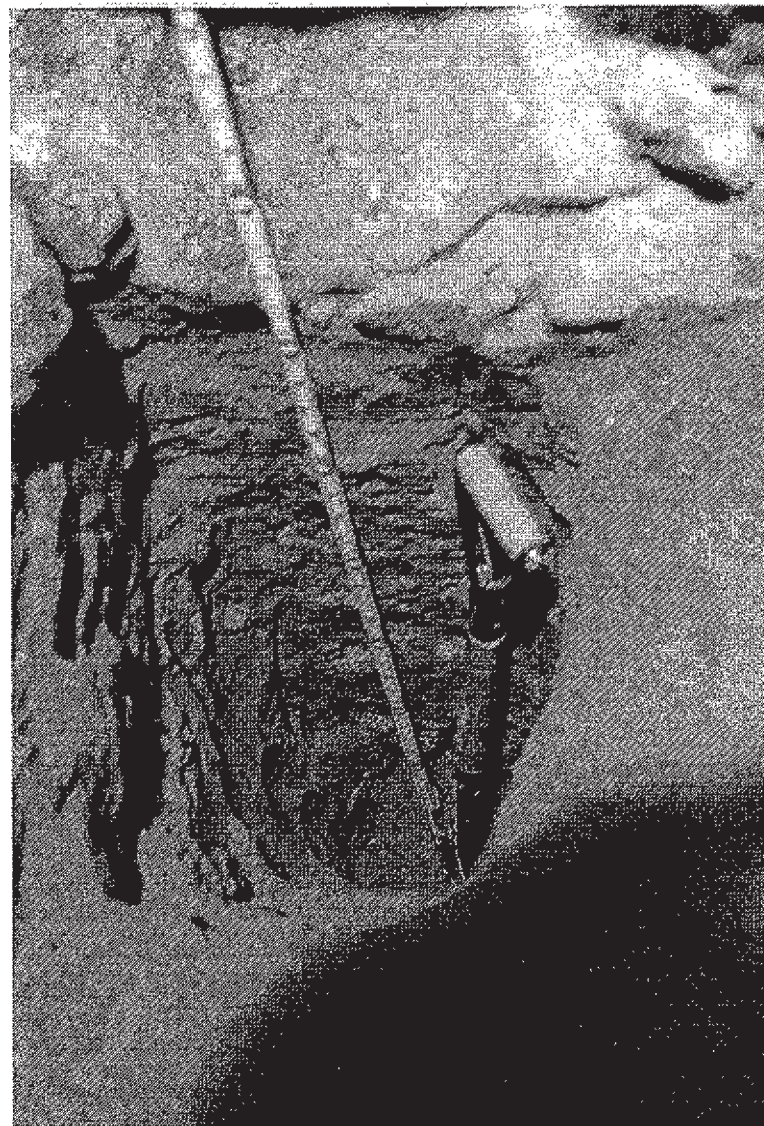


Figure 13. The bottoms of the Tower Stairhall and Central Hall foundations exposed, facing north. The ledge at the top of the photograph is the base of the hole cut through the Central Hall foundation for the HVAC duct.

Artifacts

General Comments

The materials recovered during the Tower Stairball archeology have been assigned to Accession Number, INDE 3829. They include unmodified bone, brick fragments, ceramics, a 1720 coin, glass container fragments, samples of the Strickland tower clock counterweight chute, a small lithic flake, a lightning rod, a gunflint or knapped spall, a mortar sample, nails, a modified phalange, smoking pipe fragments, a shell fragment, samples of building stone, a drilled tubular stone fragment, a pig tooth, miscellaneous ferruginous materials, flat glass, and a wire fragment.

Bone

Forty-two bone and bone fragments (Table 4), representing either medium or large mammals, were recovered. The elements which could be identified to the species level by faunal analyst, Edward Otter (1996), are a pig ulna, a pig incisor, and two cow ribs. Those identifiable to the order level include two long bones and a phalange from the Order Artiodactyla (i.e., sheep, deer, or goat). The phalange has been culturally modified and, hence, is considered separately as a *Native American ornament*.

Given the small number of pieces and their level of fragmentation, interpretation of either butchering practices or consumption patterns is not deemed feasible. Nor can the source of these materials--e.g., deposits associated with domestic activities, construction celebrations (Hazard 1828:376; Riley 1953:14), State House occupants, or public feasts (Riley 1953:16fn67)--be discerned. The extent of fragmentation, however, does indicate deposition of these materials as sheet scatter which had been subjected to post-depositional trampling by pedestrians and/or animals.

Brick

Fragments of glazed brick (clinker), very soft brick (samel or sandal), and regular brick were found (Table 5). (The three categories used to classify the brick were taken from the definitions provided by A. Bettesworth and C. Hitch (1734) in their *The Builder's Dictionary: or, Gentleman and Architect's Companion*. For the purposes of the current analysis, brick which could be readily scratched or chipped with a fingernail was classified as "soft.") All of the brick appear to have been handmade. The brick fragments, for the most part, were encountered either within the Central Hall builder's trench (Feature 2) or the historic topsoil (Stratum C). Where brick was noted elsewhere, this appeared to have resulted from some later disturbance of either Feature 2 or Stratum C. In total, 26 specimens--weighing 3777.2 grams--were kept. Many of the fragments exhibited micaceous elements in their clay body, a presence which was also noted in the paste of many of the small redware sherds. This inclusion may be an indicator of local clay sources.

All brick fragments with partial dimensions and a small sample of other fragments were retained during the fieldwork. The intact thickness on these fragments varied--2 inches, 2-3/32 inches, 2-1/8 inches, 2-3/16 inches, 2-1/4 inches, and 2-5/16 inches. The width was 4 inches. No fragments with intact lengths were recovered.

On the glazed fragments, the glazed portions were a glassy black to dark gray. The unglazed surfaces and body were dark red, dark grayish red, or dark gray. Excessive heat had caused extensive fissuring in the body of the glazed brick.

Table 4. Faunal Material from the Tower Stairhall, Independence National Historical Park, Philadelphia, Pennsylvania (adapted from Otter 1996).

Field No. (Cat. No.)	Common Name	Genus species	Element	Freq.	Weight (gm)	Comments
B2-1 (56651)	large mammal		cervical vertebra	1	8.5	left side, split longitudinally, possibly by an ax
B7-1 (56650)	large mammal		cervical vertebra	1	1.4	fragment
B7-2 (56649)	large mammal		indeterminate	4	0.8	fragment
B7-3 (56648)	large mammal	probably Order Artiodactyla	long bone	1	4.6	shaft fragment, probably sheep, deer, or goat
B7-4 (56647)	pig	<i>Sus scrofa</i>	ulna	1	14.8	proximal articulation to medial shaft fragment
B9-1 (56646)	large mammal		long bone	2	3.5	shaft fragment
B9-2 (56645)	large mammal		indeterminate	1	0.2	fragment
B9-3 (56644)	indeterminate		indeterminate	1	0.2	fragment
B10-1 (56643)	pig	<i>Sus scrofa</i>	incisor	1	1.5	
B10-2 (56642)	indeterminate		indeterminate	4	0.1	fragments
B10-3 (56641)	large mammal		long bone	3	10.0	fragments, probably pig
B10-4 (56640)	probable deer		dew claw	2	1.2	fragments
B11-1 (56639)	large mammal		long bone	1	2.9	shaft fragment
B11-2 (56638)	cow	<i>Bos taurus</i>	rib	1	3.7	fragment
B11-3 (56637)	large mammal		rib	2	1.7	fragments
B11-4 (56636)	large mammal		indeterminate	2	0.2	fragments
B12-1 (56635)	large mammal		rib	2	1.9	fragments
B12-2 (56634)	large mammal		non-long bone	1	0.5	
B12-3 (56633)	large mammal		indeterminate	1	0.5	
B12-4 (56632)	large mammal		long bone	1	5.7	

Table 4. (Continued).

Field No. (Cat. No.)	Common Name	Genus species	Element	Freq.	Weight (gm)	Comments
B12-5 (56631)	large mammal	probably Order Artiodactyla	long bone	1	3.1	probably sheep, deer, or goat
B12-6 (56630)	cow	<i>Bos taurus</i>	rib	1	7.5	
B12-7 (56629)	large mammal		long bone	2	2.2	
B12-8 (56628)	large mammal	Order Artiodactyla	phalange	1	3.4	sheep, deer, or goat
B12-9 (56627)	large mammal		indeterminate	5	1.8	fragments

Notes: (1) This table was prepared from Edward Otter's handwritten notes. Genus species and element weights were added by Paul Y. Inashima. (2) Field numbers with a "B7" prefix were recovered near Feature 1. Field numbers with a "B9" prefix were retrieved from Level 1 of Feature 2a. Field numbers with a "B10" prefix were collected from Level 2 of Feature 2a. Field numbers with a "B11" prefix were found in Stratum C 15 feet south of the north end of the unit. Field numbers with a "B12" prefix were located in Stratum C just south of Feature 2a.

In identifying the makers of the bricks used in the construction of Independence Hall, historian Edward M. Riley (1953:16fn64) cites John F. Watson's reference to construction bills contained in Andrew Hamilton's papers. Hamilton's papers indicate that Benjamin Fairman and James Stoores supplied the brick. Others, also, may have provided brick as a brick inscribed "Nicholson 1731" was found in one of the original walls of Independence Hall during restoration work in 1854 (Batcheler 1989:79, end note 1). Whether the bricks were formed and fired nearby or on site is unknown.

Ceramics

The ceramics in the Tower Stairhall collection are represented by very small sherds, only one set (INDE 56612) of which mend to provide a hint of vessel shape and style. By ware, the ceramics include delft, redware, and stoneware. These sherds are temporally consistent with the early to mid-eighteenth century.

Delft

A very small delft sherd (INDE 56560) was retrieved from Feature 2a Level 1. This sherd had split through the paste parallel to one intact glazed surface. The surface has a pattern of handpainted bands on a white background, a thin blue band is separated from a wide green band and adjoining thin brown band.

An interior tin-glazed, soft redware sherd (INDE 56599) was recovered from Feature 2a Level 1. The interior tin-glazed surface retains a broad area of off-white bordered along one fracture edge with black. The exterior surface exhibits an unidentified, brown ferruginous coating. This sherd is $7\pm$ mm thick.

A second small delft sherd (INDE 56567) was found in Feature 2a Level 2. The sherd exhibits a thick, glassy white glaze over a tan body. Portions of the remainder of the sherd thickness along with the opposite surface had spalled off.

Delft's fragile nature had led to its decline in the second half of the eighteenth century (Godden 1965:xi).

Redware

Fourteen sherds of a dark brown glazed redware vessel (INDE 56612) were recovered from Feature 2a Level 1. Seven very small sherds are plain body fragments. Six sherds are molded body fragments, indicative of vertical flutes with rounded upper ends. One fragment is a plain rimsherd which is slightly excurvate along the interior surface. The rimsherd and one of the larger fluted sherds mend (Figure 14). Narrow, shallow double grooves parallel to the lip occupy a band about 27 to 31 mm below the lip.

Two redware sherds (INDE 56591) from Feature 2a Level 1 mend along a fracture plane parallel to the interior and exterior surfaces. The interior surface exhibits a brown glaze. The exterior surface is unglazed, but exhibits very fine parallel smoothing lines. The mended sherds yield a $8.7\pm$ mm thick body. Micaceous elements are evident in the paste.

One spotted, dark brown, interior glazed redware sherd (INDE 56590) was recovered from Feature 2a Level 1. Broad, shallow ribbing is present on the interior. The exterior is unglazed.

One yellow slip redware rimsherd (INDE 56563) was retrieved from Feature 2a Level 1. The coggled edge retains a yellow slip which is bordered by a moderately wide, wavy band of brown which had been created by cutting through the yellow slip which had covered the surface of the sherd. That band, in turn, borders a wider area of yellow slip. The lip of the rim angles down and inward towards the unglazed basal surface. The rimsherd is $8.5\pm$ mm thick.

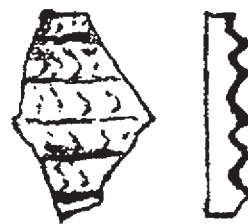
Two sherds of dark reddish-brown, interior and exterior glazed redware (INDE 56589) were found in Feature 2a Level 1. One sherd is a small body fragment. The other exhibits two molded, V-shaped ribs with

Table 5. Brick samples retained from the HVAC utility trench excavation in the Tower Stairhall.

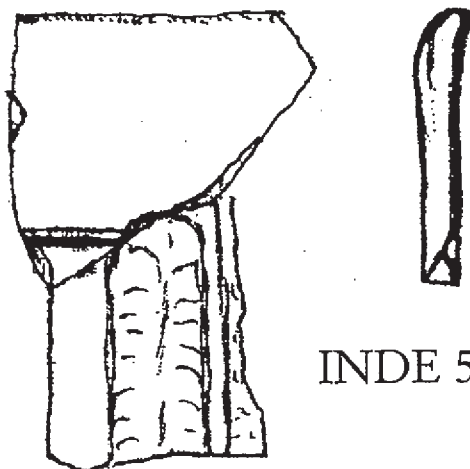
Cat. No.	Provenience	Object	Section	Freq.	Weight (gm)
INDE 56619	Str. B above Fea. 2a	Soft brick	Fragment	2	236.5
INDE 56601	Base of upper pit, Fea. 1	Glazed brick	Fragment w/wd. of 4 inches; post-depositional cementitious mortar attached	1	428.6
INDE 56608	Fea. 2a Lv. 1	Regular brick	Fragment, one w/th. 2-1/4 inches	3	241.6
INDE 56564	Fea. 2a Lv. 2	Soft brick	Fragment, one w/th. of 2-5/16 inches	2	230.4
INDE 56565	Fea. 2a Lv. 2	Regular brick	Fragment w/th. of 2-1/4 inches; possibly formed on sand bed	1	199.3
INDE 56574	Fea. 2a Lv. 2	Glazed brick	Corner fragment	1	306.5
INDE 56595	Fea. 2b	Regular brick	Fragment w/th. of 2-1/4 inches	1	392.7
INDE 56594	Fea. 2b	Regular brick	Fragment	1	100.0
INDE 56593	Fea. 2b	Glazed brick	Fragment	2	351.7
INDE 56578	Str. C south of Fea. 2a	Soft brick	Corner w/th. of 2-3/16 inches	1	154.3
			Corner w/th. of 2-5/16 inches	1	105.1
			End w/th. of 2 inches and wd. of 4 inches	1	358.0
INDE 56577	Str. C south of Fea. 2a	Regular brick	Corner w/th. of 2-1/8 inches	1	136.9
			Fragment w/th. of 2-1/4 inches	1	114.7
			Fragment	1	68.9
INDE 56579	Str. C south of Fea. 2a	Glazed brick	Fragment	4	51.5
INDE 56603	Str. C 15 foot south of north end of trench	Glazed	Corner w/th. of 2-3/32 inches	1	140.3
INDE 56602	Str. C 15 foot south of north end of trench	Glazed	Corner w/th. of 2-1/8 inches	1	160.2
Total				26	3777.2



INDE 56589



INDE 56614



INDE 56612



Figure 14. Redware sherds recovered during archeological monitoring within the Tower Stairhall.

relatively wide intervening grooves (Figure 14). Adjoining the rib and groove band is an area of plain surface. Broad, very shallow ribbing along the interior surface can be sensed. The interior surface also is slightly incurvate towards the rib and groove end of the sherd. The sherd is $7.3 \pm$ mm thick at the ribs, and $6.4 \pm$ mm thick at the body. Widths at the base of the ribs and across the intervening grooves are $2.5 \pm$ mm.

Two clear glazed redware sherds (INDE 56557) were retrieved from Feature 2a Level 2. One has a thickness of $6.3 \pm$ mm.

A thick, caramel-brown glazed redware sherd (INDE 56572) was recovered from Feature 2a Level 2. Both surfaces are glazed. Two very shallow, widely spaced ribs are present on one surface. Each rib is $7.4 \pm$ mm wide at its base; the intervening space is $10.3 \pm$ mm wide. The sherd's maximum thickness is 12.65 mm; its minimum thickness is 9.33 mm. The other surface is broadly rounded.

Three small, greenish-brown glazed redware sherds (INDE 56571) were collected from Feature 2a Level 2. Both surfaces are glazed on the two intact fragments; they have thicknesses of $7.5 \pm$ mm and $7.32 \pm$ mm. The third fragment is a surface spall.

A small fragment of reddish-brown glazed redware was found in Feature 2a Level 2. One surface is glazed; that surface exhibits curved concentric scratch marks. The opposite surface is unglazed and smooth. The sherd has a thickness of $8.5 \pm$ mm.

An interior, brown-glazed redware sherd (INDE 56582) was found in Stratum C south of Feature 2a. The exterior surface retains an unidentified, brown ferruginous coating similar to that on INDE 56599. The sherd is $6.1 \pm$ mm thick.

A small redware sherd with parallel ribs along its surface (INDE 56614) was retrieved from Stratum C along the east side of the Feature 1 pit (Figure 14). Dark brown glaze covers both surfaces. The ribs or ridges are V-shaped. The intervening grooves are broadly U-shaped. At the ribs, the sherd is generally 5.3 mm thick. At the grooves, it is about 3.5 mm thick. The crest of the ribs are approximately 4 mm apart.

Two small, plain body sherds (INDE 56605) similar to INDE 56612 were found in Stratum C $15 \pm$ feet south of the north end of the unit. These sherds exhibit a dark brown glaze over both the interior and exterior surfaces.

A small, relatively thick ($6.6 \pm$ mm) sherd of redware (INDE 56606) was recovered from Stratum C $15 \pm$ feet south of the north end of the unit. The interior surface exhibits a brown glaze; the exterior surface is smoothed and unglazed. Two similar sherds which are brown glazed on the interior surface (INDE 56600) were found in Feature 2a Level 1. One is thicker ($10.6 \pm$ mm), and the other is about the same thickness ($6.2 \pm$ mm). Another sherd with these characteristics was found in Stratum C south of Feature 2a. It is $6 \pm$ mm thick. Three interior, brown-glazed sherds (INDE 56573) were retrieved from Feature 2a Level 2. Two of these have been split along a plane parallel to the interior surface. The third retains a thickness of $9.5 \pm$ mm.

Stoneware

One small, off-white stoneware (INDE 56556) sherd with truncated incised, parallel curved lines was collected from Feature 2a Level 2. It has a thickness of $6.35 \pm$ mm.

Two gray bodied stoneware sherds (INDE 56581) were collected from Stratum C south of Feature 2a. The interior exhibits a vitrified, glassy gray surface. The exterior surface is an unglazed dull red on one, and an unidentified ferruginous coating on the other. The sherds are $4 \pm$ mm and $5.5 \pm$ thick, respectively.

One gray bodied stoneware sherd (INDE 56580) with vitrified interior and exterior surfaces was retrieved from Stratum C south of Feature 2a. The thickness steps upward along the exterior surface from $5.9 \pm$ to $7 \pm$ mm. A somewhat larger sherd which mends with the former was recovered from Feature 2a Level 1. The thicker interior portion appears to be circular, with two concentric grooves towards the center. This section--due to its partial width--seems to represent the remnant of a solid basal area, rather than a footrim.

Unglazed spalls

Two unglazed ceramic spalls (INDE 56575) were retrieved from Stratum C south of Feature 2a. These fragments weigh 7.4 grams. Three additional spalls, weighing 10 grams, were found in Feature 2a Level 1.

Coin

A King George I copper halfpenny (Figures 15 and 16) was found near the top of Stratum C (the historic topsoil), just south of the Central Hall builder's trench. On the coin (INDE 52876), the profile of King George faces to the right, and the text above the profile reads, "GEORGIVS REX." The reverse side depicts a crowned, seated lady facing to the left. She has a staff in her left hand and a torch (?) in her right hand. Around the edge of the reverse surrounding the figure is the label, "BRITANNIA." Below the figure is the date, "1720." King George I reigned from 1714 to 1727. A similar coin is illustrated in Ivor Noël Hume's (1978:157, Figure 59, Item 11) book, *A Guide to Artifacts of Colonial America*. A halfpenny was equivalent to 2 farthings, 1/24 of a shilling, or 1/480 of a pound.

Of numismatic interest, as Noël Hume (1978:158) notes, British coinage from the time of William III (1694-1702) to Victoria (1837-1901) shifted the orientation of the monarch's profile from one side to the other between reigns. Thus, King George I faced right. King George II faced left. King George III faced right. King George IV faced left.

The time of the coin's deposition falls somewhere between its date of minting in 1720 and its burial beneath the soils excavated for the Tower Stairhall foundations in 1750.

To preclude future deterioration, the copper halfpenny was treated and stabilized by conservator, Katherine Singley. To summarize her condition report, the coin was "partially covered by an encrustation of mortar and brick dust. Patches of crystalline carbonate corrosion under the encrustation are probably due to contact with the alkaline mortar. Otherwise the coin is covered with a compact and coherent dark green patina." During the conservation treatment, the dirt and encrustation were removed by mechanical cleaning. Then, a 10% to 15% solution of formic acid was applied locally for final cleaning. The compact green patina was retained, and the coin was treated under vacuum with 3% benzotriazole in ethanol. The piece was dried and lacquered. The adhering mortar was retained as a separate sample and was returned along with the coin to the park.

Container

Two fragments from glass containers were found. One very small, pale green tinted glass fragment (INDE 56586) from a bottle or other container was found in Feature 2a Level 1. A heavily patinated, dark green basal fragment (INDE 56585) from a bottle was recovered during the excavation of Stratum C just south of Feature 2a.

Counterweight Chute, Strickland Clock

Ferrous metal fragments from the Strickland clock counterweight chute were retrieved from the soils surrounding the intact remnant of that structure. These fragments (INDE 56625) include three small-to-medium sections from one of the panels and a segment of one of the corners. These fragments were most likely dislodged during the dismantling of the counterweight chutes during the 1896-1898 restoration. Although these fragments of side panels could not be effectively measured due to the extent of corrosion, the intact chute



Figure 15. King George I halfpenny (obverse).



Figure 16. King George I halfpenny (reverse).

panels are 3/16-inch (0.48 cm) thick.

Flake

A small flake made from an unidentified black stone (INDE 56568) was recovered from Feature 2a Level 2. A striking platform is evident. Its maximum length is c. 19.5 mm, and its maximum width is c. 16.2 mm.

Grounding rod

An iron grounding rod (INDE 56624) for a lightning suppression system was found in the northwest corner of the HVAC trench. The top of the rod lay just beneath the base of the 1967 concrete flooring base. The rod prior to conservation measured c. 0.05 foot (1.5 cm) in diameter. The upper section was bent at a 30° angle from vertical. The upper end was flattened into a circular shape with a circular eyelet. The lower end was pointed. The straight segment measured c. 4.05 feet (123.4 cm) long; and the bent segment, c. 0.7 foot (30.5 cm) long. When discovered, the artifact was heavily corroded. Its age was not determined.

Whether this artifact is the same as or one similar to the lightning rod referred to by Batcheler (1989:69-70) as having been found during the 1960s restoration could not be determined. That item was described as "a section of a nineteenth century iron lightning rod, found in the northwest corner of the Tower Stairhall behind the first floor dado paneling and embedded in the plaster above the dado paneling."

To preserve this artifact for the future, the rod was cleaned and conserved by Katherine Singley. To summarize her conservation report, treatment occurred from August 17 to August 20, 1997. The procedures included mechanical removal of corrosion by use of a small chisel, a vibratool, and a Dremel mini-rotary drill. To facilitate the removal of corrosion, oxides, and scale, CRC 336 was applied on cotton toweling which was then wrapped around the rod. The bundle, in turn, was encased in plastic sheeting overnight. A final cleaning with the Dremel roto-tool was conducted, and the piece was rewrapped in a CRC 336 bundle overnight. Lastly, a 5% solution of 367 in naptha was applied by brush.

Gunflint, Strike-a-light, or Knapped Spall

A modified, curved gray, variegated, translucent flint "flake" (INDE 56598) was found in Feature 2a Level 1. The ventral surface of the item is smooth and curved. The dorsal surface exhibits three dominant linear planes. The proximal end exhibits a steep, worked edge, and retains some cortex. The distal end has been snapped off. Its maximum partial length is 22 mm. The maximum width, at the distal end, is 20 mm. Its maximum thickness is 6.4 mm. Its fragmentary condition precludes a definitive identification. However, its shape suggests a spall being fashioned into a gunflint, a broken gunflint, or a strike-a-light.

Mortar

A clump of cementitious mortar (INDE 56613) was recovered from the Feature 1 pit at an elevation of 27.85± feet (8.49± meters). This specimen weighs 65.3 grams.

Nails

Two iron cut nails (INDE 56626) were found beneath the 1967 sand base and above the top of the foundation at the north end of the trench. These nails were situated below the elevation of the baseboards. Both are 2-1/2 inches long, and lack "heads." To preserve these nails for the future, both were cleaned and stabilized by conservator, Lisa Young.

One corroded, 2-5/8 inch long, L-headed iron cut nail (INDE 56615) was found at the top of Stratum B. One heavily corroded, indeterminate iron nail fragment (INDE 56621) was recovered near the top of Feature 1.

A 2-1/2 inch long (INDE 56560) cut nail with a hammered head was found in Feature 2a Level 1.

Ornament, Native American

A phalange (INDE 56628) retrieved from Stratum C south of Feature 2a appears to be part of a Native American ornament, and may represent an element from a bone necklace (Figures 17 and 18). Two holes had been drilled in it. One hole enters directly into one end. The other is drilled perpendicular to and near the opposite end. Alternatively, the phalange may have been part of a museum skeletal display although the offset placement of the second hole would appear to argue against that interpretation.

Pipes, Smoking

Eight pipestem fragments were collected. A plain pipestem fragment (INDE 56618) with a bore diameter of 5/64 inch was found beneath the 1967 concrete flooring base in the northwest corner of the unit. Two plain pipestem fragments and one horizontally split plain pipestem fragment were recovered from Feature 2a Level 1 (INDE 56592). The bore diameters of the first two fragments are 5/64 inch. Two additional pipestem fragments with bore diameters of 5/64 inch were retrieved from Feature 2a Level 2 (INDE 56559). Two plain pipestem fragments (INDE 56604) with bore diameters of 5/64 inch were, also, recovered from Stratum C 15± feet south of the north end of the HVAC trench.

Three small, plain pipe bowl fragments (INDE 56609) were located in Feature 2a Level 1. One sherd retained a segment of the rim. Relative to a vertical orientation of the sherd, the lip of the bowl is flat and angled downward towards the exterior. The other two fragments are body sherds. Both of these retain a charred interior surface. A small, undecorated pipe bowl fragment (INDE 56558) was found in Feature 2a Level 2. Two small, plain pipe bowl fragments (INDE 56585) were, also, retrieved from Stratum C just south of Feature 2a.

Archeologist, J.C. Harrington (1978), has described a technique for dating pipestems which were produced during the period from c. 1620 to 1800. His research indicated that "the stem hole was of constant diameter throughout" with the exception of the mouth end "where the hole had been enlarged in the process of removing the wire," and that over time, the stem hole decreased in size. He charted the "modal" distribution of stem hole diameters as 8/64 inch for 1620-1650, 7/64 inch for 1650-1680, 6/64 inch for 1680-1710, 5/64 inch for 1710-1750, and 4/64 inch for 1750 to 1800.

Subsequently, Lewis Binford (1978:66) refined the application of Harrington's findings by converting the modal distribution into a regression formula, $Y=1931.85-38.26X$. In this formula, Y equaled the calculated date of the pipestem sample. 1931.85 was the theoretical point at which the stem hole diameter would become zero. 38.26 was the rate of change in years from one mean stem hole diameter to another. X was the mean pipestem diameter of the sample. To those using his formula, Binford cautioned that there is a "breakdown

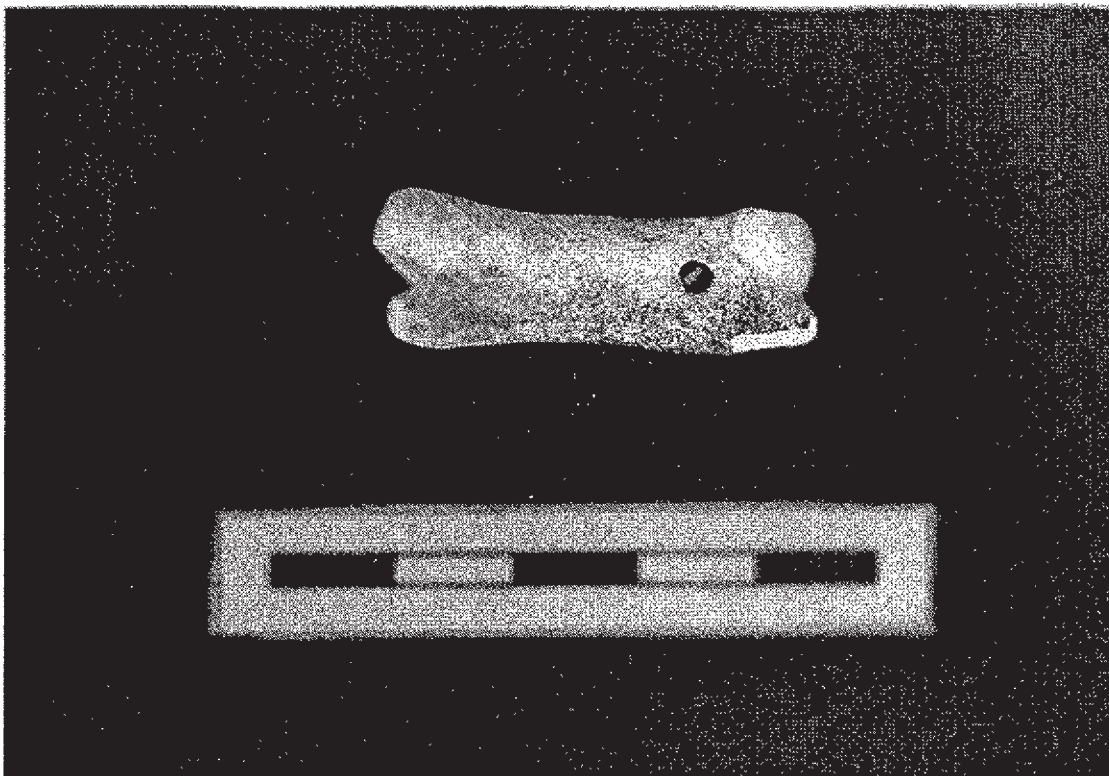


Figure 17. Drilled phalange.

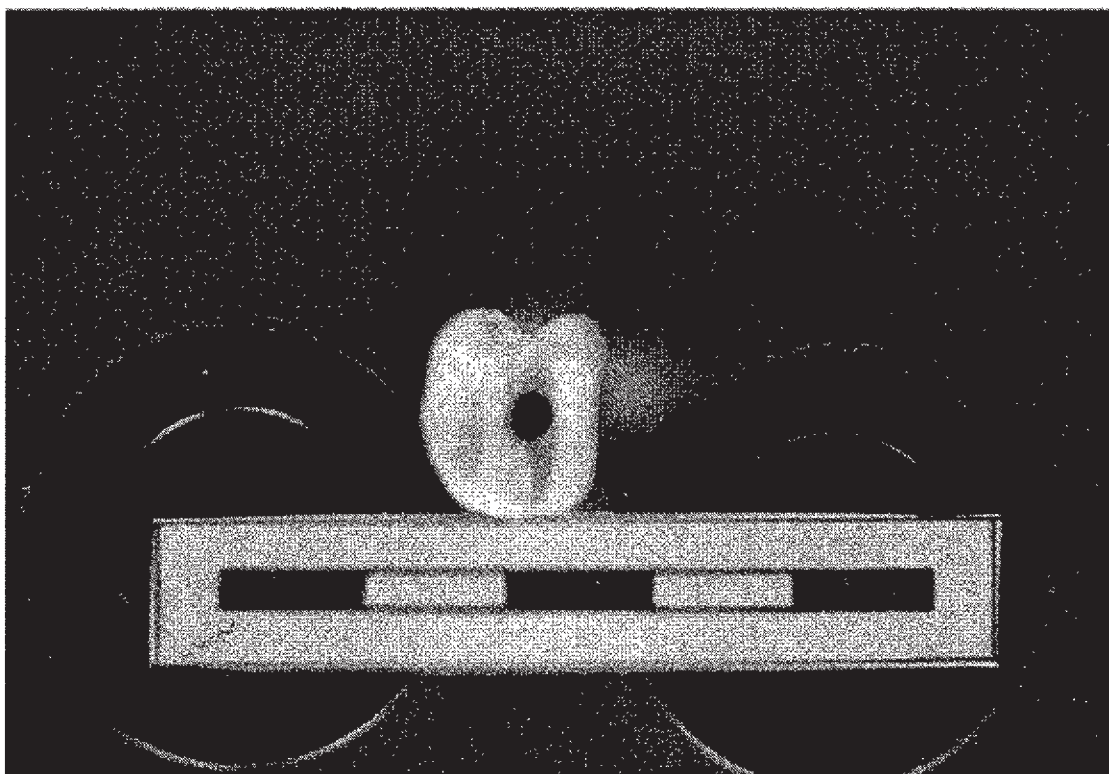


Figure 18. Drilled end of phalange.

in the correlation after roughly 1780."

In the case of the present collection, the 5/64 inch bore diameters are temporally consistent with the period between the construction of the Central Hall and the construction of the Tower Stairhall (c. 1732-1750). Harrington's chart places the pipestems between 1710 and 1750. Binford's formula dates the sample to 1740.55, remarkably close to the mean date of construction (1741) of the foundations for the two building components.

Shell

A small fragment (INDE 56596) from the edge of an unidentified species of small, flat shellfish was found in Feature 2a Level 1. This fragment weighs 0.1 gram.

Six small laminate fragments (INDE 56583) from possible oyster shell were found in Stratum C south of Feature 2a. These fragments weigh 1.7 grams.

Stone

Stone fragments were observed primarily in the area of Feature 1, where sections of the west Tower Stairhall foundation had been removed to accommodate the counterweight chute for the Strickland tower clock system. Most of these fragments were micaceous schist fieldstone. One sample, weighing 156.4 grams, from the upper 1.0 foot of the chute pit was retrieved. One sample, weighing 94.4 grams, from the top of the pit was retained (INDE 56623). A few of the observed stone fragments were a micaceous quartz conglomerate. One sample, weighing 164.2 grams, was kept from the top of the Feature 1 pit (INDE 56622). At least one of the pieces removed was steatite.

Stone, Tubular

A small, split tubular siliceous stone fragment (INDE 56569) was recovered in Feature 2a Level 2. This fragment, similar in appearance to a pipestem, had been partially drilled through its center, and had been split in half lengthwise. Both ends had been fractured. This item may have been related to Native America activity.

Tooth

A single pig (*Sus Scrofa*) incisor (INDE 56643) was recovered from Feature 2a Level 2.

Unspecified Ferruginous Materials

Seventeen pieces of clumpy (5) to linear (12), heavily corroded ferrous materials (INDE 56597) were kept from Feature 2a Level 1 for future analysis. Due to the amount of adhering corrosion, it could not be determined with certainty whether the linear items were nails, bolts, wires, or other similar artifacts. These specimens total 200.4 grams. Four linear, heavily corroded ferrous items (INDE 56566) were, also, retained from Feature 2a Level 2 for future analysis. These specimens weigh 26.3 grams.

Window Glass

During the early eighteenth century, two general methods of window glass manufacture were available (Wilson 1976:150-152, 157). The first, cylinder or broad glass, entailed a blown cylindrical tube which was later cut lengthwise and flattened. The second, crown glass, involved a blown and spun, flat circular disk. While the latter was superior in quality, it was limited in the size of glass which could be made. Although Casper Waster had established a small, successful glasshouse in Alloway, South Jersey in 1739, most of the window glass during this period was imported. Window glass was first installed in the State House during the summer of 1741 (Riley 1953:13-14). During the 1750s-1760s, crown glass, broad glass, and isinglass were supplied to the State House by Christopher Marshall (Batcheler 1989:95, end note 15). The source of Marshall's window glass apparently was not specified in the historical records.

The window glass fragments from the HVAC trench are relatively thin and very small. One 1.1 mm thick fragment of flat glass (INDE 56617) was located in the upper 1.0 foot of the clean fill layer. One 0.9 mm, twenty-six 1.0 mm, and fourteen 1.1 mm thick (INDE 56610) fragments were recovered from Feature 2a Level 1. Twelve 1.2 mm, twelve 1.3 mm, and ten 1.4 mm thick (INDE 56588) fragments were collected from Feature 2a Level 1. Four 1.6 mm thick, four 1.7 mm thick, and three 1.8 mm thick (INDE 56611) fragments were found in Feature 2a Level 1. One 2.2 mm thick (INDE 56587) fragment was found in Feature 2a Level 1.

One 1.7 mm thick, two 1.6 mm thick, and four 1.5 mm thick flat glass fragments (INDE 56576) were recovered from Stratum C south of Feature 2a. One 1.3 mm thick (INDE 56607) fragment was retrieved from Stratum C 15± feet south of the north end of the HVAC trench.

Wire

One heavily corroded, possible iron wire fragment (INDE 56620) was retrieved from the top of Feature 1.

Summary, Conclusions, and Recommendations

After restoration activities had begun on the Independence Hall building complex, the decision was made to abandon the asbestos-insulated HVAC duct which lay beneath the east side of the Tower Stairhall (see Note 1) rather than to replace it as had originally been designed (Vitetta Group 1993). This decision necessitated the excavation of a new HVAC utility trench beneath the west side. Although measures were taken to minimize impacts to cultural resources and to mitigate those which occurred, the installation led to the removal of historic building fabric (i.e., part of the stone foundation of the Central Hall for the passage of the HVAC ductwork) and archeological resources (i.e., part of the Central Hall foundation builder's trench and the adjoining historic topsoil layer for the entry of the HVAC ductwork into the Tower Stairhall). Photographic documentation, measured drawings, selective controlled archeological excavation, and archeological monitoring were performed as ameliorative measures.

Though limited in scope, the archeological activities yielded information on (1) the existence, form, and composition of the 1732 Central Hall foundation builder's trench; (2) the composition, shape, and depth of the 1732 Central Hall foundation; (3) the composition, shape, and depth of the 1750 Tower Stairhall foundation; (4) the structural relationship between the Central Hall and Tower Stairhall foundations; (5) the existence, nature, and depositional contents of the 1750 land surface; and (6) the existence, form, and condition of part of the c. 1828 Strickland tower clock system. Despite the small and highly fragmented condition of the

recovered artifact collection, consideration of the small percentage (5+ % within the HVAC trench) of the exposed historic topsoil layer which was excavated indicates that the potential for the recovery of artifacts which may elucidate historical archeological issues remains preserved in the unexcavated topsoil at the base of the present HVAC utility corridor and the unexposed central area of the Tower Stairhall. In addition to artifacts, the potential for the recovery of micro- and macro-botanic evidence related to historical contexts exists, as does the potential for the survival of feature evidence related to the c. 1690 well beneath the Central Hall and to the construction of both the Central Hall and Tower Stairhall. Finally, the historic topsoil layer presents possibilities for the clarification of questions pertaining to historic topography and landform.

Given the removal of and disturbance to historic fabric and archeological resources which have occurred as a result of the installation of the earlier HVAC duct corridor beneath the east side of the Tower Stairhall and of the present system beneath the west side, it is highly recommended that future work within the Tower Stairhall seek to avoid the introduction of any new impacts. The effects of cumulative impacts are of grave concern as the historic fabric and the archeological resources involved are irreplaceable and significant. The former is significant as it comprises Independence Hall itself. The latter is significant as it relates to Independence Hall, as well as to earlier historic landscapes. Given the relationship to Independence Hall and the rarity of early eighteenth-century Philadelphia land surfaces, the "islands" of archeological resources which survive beneath the Tower Stairhall and, by extension, the Central Hall are recommended eligible either alone or as contributing elements for listing in the National Register of Historic Places under Criterion D (National Park Service 1991).

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Notes

1. Drawing NHP:IND 3313-B, sheets M-1 and M-2, locate the asbestos cement duct which currently lies beneath the east half of the tower room. These drawings are dated September 1965. Sheet M-5, Section "H-H", depicts the east-to-west cross section through the northern grille and below the stairway. The notations on the section indicate "Excavation by Government" and "Backfill by Contractor." It might be assumed from the cross section that the installation was accomplished by removing the brick flooring beneath the stairway and excavating directly down.